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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/767,730

01/30/2004

John D. Birdwell

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09/28/2006

BANNER & WITCOFF

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EXAMINER

NGUYEN, MERILYN P

ART UNIT

PAPER NUMBER

2163

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/767,730

Applicant(s)

BIRDWELL ET AL.

Examiner

Merilyn P. Nguyen

Art Unit

2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 42-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 42-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                      |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                          | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                                 | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/30/2004 &amp; 11/12/2004</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Detailed action</u> .                  |

***DETAILED ACTION***

1. Claims 42-72 are active in this application.
2. This application is a DIV of 09/671,304 filed 09/28/2000 now patent number 6,741,983 which claims benefit of 60/156,452 filed 09/28/1999.

***Acknowledges***

3. Receipt is acknowledged of the following items from the Applicant:
  - The applicant preliminary amendment has been considered and made of record.
  - Information Disclosure Statement (IDS) filed on 30 January 2004 and November 12 2004 and made of record. The references cited on the PTOL 1449 form have been considered.

***Drawings***

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

Art Unit: 2163

be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Objections***

5. Claim 65 is objected to because of the following informalities: At line 1, the recitation of "a method of partitioning data for a data for a database" appears as typo mistake. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 55 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim recites, "the value of the function is minimized" which is not described in the

Art Unit: 2163

specification. It's unclear what Applicant meant by "the value of the function is minimized".

This added limitation appears to be a new matter to the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 42, 48, 55, 56, 60 and 65 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 42 and 56, there is insufficient antecedent basis for "the values" at line 3 and "the value of the function" at line 7. This claim is also incomplete for omitting essential cooperative relationships of elements. For example, the step of "assigning each data record to a group according to the value of the designated variable" is not related to other steps because assigning each data record to a group does not relate to function comprises a combination of measures and to partitioning step. The step of assigning each data record to a group requires only "according to the value of the designated variable".

Regarding claim 55, the action being described as "minimized" is vague and indefinite giving the lack of support found in the specification.

Regarding claim 65, the phrase "may be" (line 4) renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Also, there is insufficient antecedent basis for "the data records" at line 8 and "an associated set of clusters defined" at line 12.

Art Unit: 2163

Regarding claims 48 and 60, the phrase "may simultaneously" (line 2) renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 42-52, 54-63, and 65-71 are rejected under 35 U.S.C. 102(e) as being anticipated by Sjolander (US 6,128,587).

Regarding claim 42, Sjolander discloses a method of partitioning data records in a computer into groups (See Fig. 5A and col. 6, line 55 to col. 8, line 36), comprising the steps of:

- (a) defining a function of a distribution (distribution p/q) of the values of a designated variable associated with the data records, wherein the function comprises a combination of measures (entropy measure) (See col. 8, lines 5-35);
- (b) partitioning the values of a designated variable into two or more groups (subfamilies) (See col. 7, lines 8-14), wherein the value of the function is determined by applying an optimization procedure (minimizing the encoding cost) (See col. 7, line 7, lines 18-20 and col. 8, lines 45-67 and col. 16, lines 54-69); and

Art Unit: 2163

- (c) assigning each data record to a group according to the value of the designated variable (See col. 9, lines 19-55).

Regarding claim 56, Sjolander discloses a method of partitioning data records in a computer into groups (See Fig. 5A and col. 6, line 55 to col. 8, line 36) of approximately equal size (See col. 4, lines 1-2), comprising the steps of:

- (a) defining a function of a distribution (distribution  $p/q$ ) of the values of a designated variable associated with the data records, wherein the function comprises a combination of measures of entropy and adjacency (See col. 8, lines 5-35);
- (b) partitioning the values of a designated variable into two or more groups (subfamilies) (See col. 7, lines 8-14), wherein the value of the function is determined by applying an optimization procedure (minimizing the encoding cost) (See col. 7, line 7, lines 18-20 and col. 8, lines 45-67 and col. 16, lines 54-69); and
- (c) assigning each data record to a group according to the value of the designated variable (See col. 9, lines 19-55).

Regarding claim 65, Sjolander discloses a method of partitioning data for a data for a database in a computer, wherein the database is indexed using a tree of nodes, wherein the tree of nodes comprises a root node which is connected to two or more branches originating at the root node, wherein each branch terminates at a node, wherein each node other than the root node may be a non-terminal node or a leaf node, wherein each non-terminal node is connected to two or

Art Unit: 2163

more branches originating at the non-terminal node and terminating at a node, wherein the tree-structured index comprises one or more tests associated with each non-terminal node (See

Abstract, Fig. 5 and col. 14, lines 21-67), said method comprising the steps of:

- (a) identifying naturally occurring sets of clusters in the data records of the database (See col. 13, lines 22-35);
- (b) defining for each identified set of clusters a test (entropy measure) that assigns each data record within the set of clusters (See col. 14, lines 21-65); and
- (c) associating each test defined in step (b) with a non-terminal node and an associated set of clusters defined in step (a) (See col. 14, lines 21-30 and lines 50-58), and associating with each cluster within the set of clusters one branch originating at the non-terminal node (See col. 14, line 56-68), said branch forming part of one or more paths leading to leaf nodes comprising the data records assigned to the cluster by the test (See col. 14, lines 50-59).

Regarding claims 43 and 66, Sjolander discloses wherein said partitioning comprises partitioning of data records into groups of approximately equal size (See col. 14, lines 1-2).

Regarding claims 44 and 57, Sjolander further discloses the step of selecting a partition from many computed solutions yielding acceptable performance (See col. 9, lines 19-53, "Find the partition giving the greatest savings in encoding cost relative to P1").



Art Unit: 2163

Regarding claims 45 and 58, Sjolander discloses wherein said optimization procedure results in an optimal assignment (See col. 9, lines 13-15 and col. 16, lines 56-60).

Regarding claims 46 and 67, Sjolander wherein said function is a combination of entropy and adjacency (See col. 8, lines 5-35 and Fig. 4A and corresponding text).

Regarding claims 47, 59, and 68, Sjolander discloses wherein said combination is linear (See col. 9, line 25 to col. 10, line 66).

Regarding claims 48 and 60, Sjolander discloses wherein the designated variable may simultaneously comprise a plurality of values (See col. 8, lines 23-26, "random variable").

Regarding claims 49 and 62, Sjolander discloses wherein the designated variable corresponds to a designated DNA locus (See col. 6, lines 2).

Regarding claims 50, 63, and 70, Sjolander discloses wherein the data records are applicable to agriculture (See col. 2, lines 10-13).

Regarding claims 51, 52, 61 and 71, Sjolander discloses wherein the data records are applicable to forensic science where the forensic science application includes DNA analysis (See col. 6, lines 2).

Art Unit: 2163

Regarding claim 54, Sjolander discloses wherein the data records comprise references to textual information (See Fig. 3).

Regarding claim 55, As best understood, the function described as “minimized” is construed as the same function being described by Sjolander in column 7, lines 18-20.

Regarding claim 69, Sjolander discloses wherein the data corresponds to DNA (See col. 6, lines 2).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2163

9. Claims 53, 64 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sjolander (US 6,128,587).

Regarding claims 53, 64, and 72, Sjolander discloses all the claimed subject matters set forth above. However, Sjolander is silent as to wherein the data records are applicable to space science. However, the difference are only found in the nonfunctional descriptive material and do not alter how the partitioning function (i.e., the descriptive material does not reconfigure the partitioning). Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, *see In re Gulack*, 703 F.2d 1381, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the method of partitioning data records of Sjolander to any type of application including space science as instant invention because different type of application data does not alter how the partition functions and because the subjective interpretation of the space science does not patentably distinguish the claimed invention.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Evans U.S Patent No. 6,336,106 discloses system and method for partitioning a real-valued attribute exhibiting windowed data characteristics.

Li U.S Paten No. 5,734,893 discloses progressive content-based retrieval of image and video with adaptive and iterative refinement.

Art Unit: 2163

Castelli U.S Patent No. 6,122,628 discloses multidimensional data clustering and dimension reduction for indexing and searching.

Fayyad U.S Patent No. 6,633,882 discloses multi-dimensional database record compression utilizing optimized cluster models.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Merilyn P Nguyen whose telephone number is 571-272-4026.

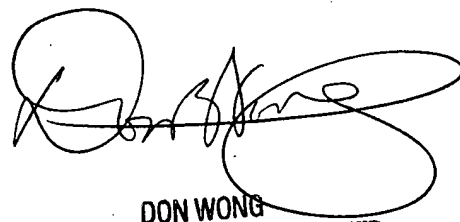
The examiner can normally be reached on M-F: 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



MN  
September 16, 2006



DON WONG  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100